

a capacitor formed on the conductive film and comprising a first electrode, a ferroelectric film and a second electrode;

wherein the ferroelectric film includes at least one element selected from the group consisting of lead, barium and bismuth and formed from above the first electrode to above the insulating film;

wherein a reaction barrier film is provided between the insulating film and the ferroelectric film, said reaction barrier film being in contact with a lower surface of said first electrode such that the reaction barrier film is interposed between the lower surface of the first electrode and said insulating film;

wherein a diffusion barrier film is provided between the conductive film and the first electrode and side faces of the diffusion barrier are not brought into contact with the ferroelectric film;

wherein an upper surface of said diffusion barrier film and an upper surface of said reaction barrier film are substantially on a same plane; and

wherein side faces of the first electrode are provided to be brought into contact with the ferroelectric film.

C8

7. (Amended) A semiconductor device comprising:

a substrate provided with a transistor;
an insulating film formed on the substrate and having an opening portion;
a conductive film formed in the opening portion; and
a capacitor formed on the conductive film and comprising a first electrode; a ferroelectrics film and a second electrode;

wherein the ferroelectric film includes at least one element selected from the group consisting of lead, barium and bismuth and formed on an upper face and side faces of the first electrode and on the insulating film;

wherein a reaction barrier film is provided between the insulating film and the ferroelectric film, said reaction barrier film being in contact with a lower surface of said first electrode such that the reaction barrier film is interposed between the lower surface of the first electrode and said insulating film;

wherein a diffusion barrier film is provided between the conductive film and the first electrode and in the opening portion of the reaction barrier film; and

wherein an upper surface of said diffusion barrier film and an upper surface of said reaction barrier film are substantially on a same plane.

14. (Amended) A semiconductor device comprising:

a substrate having a transistor;
an insulating film formed on the substrate and having an opening portion extending completely through said insulating film;

a diffusion barrier layer provided in the opening portion to extend completely through the insulating film to form a plug, wherein said diffusion barrier layer comprising said plug is connected to the transistor;

a reaction barrier film provided on the insulating film;
a first electrode electrically connected to the diffusion barrier layer, wherein said reaction barrier film is provided in self-alignment with said first electrode;

a ferroelectric film provided on the first electrode and including at least one element selected from the group consisting of lead, barium and bismuth; and
a second electrode provided on the ferroelectric film.